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PATENT SPECIFICATION



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(A Sample has been furnished in this case under Section 2, sub-section 5, of the Patents and Designs Acts, 1907 to 1932.)

COMPLETE SPECIFICATION

Manufacture of Stable Colloidal Dispersions of Metals

We, I. G. FARBENINDUSTRIE AKTIEN-GESELLSCHAFT, a Joint Stock Company organised according to the laws of Germany, of Frankfurt a/Main, 5 Germany, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

- 10 According to this invention stable and colloidal aqueous dispersions of metals, especially of bismuth, silver and gold, are made by adding a water-soluble oxyalkyl-cellulose or a derivative thereof and a water-soluble salt of lysalbinic acid or protalbinic acid or salts of both acids. As water-soluble oxyalkyl-cellulose there may be used, for instance, hydroxyethyl cellulose or hydroxyethylmethyl cellulose. 15 20 25 30
- As water-soluble salts of lysalbinic acid or protalbinic acid there may especially be used the sodium salt. In this manner, there may be made, for instance, a stable aqueous dispersion containing about 0.33 per cent. of colloidal bismuth, by using an addition of about 0.2 per cent. of a water-soluble oxyalkyl-cellulose, for instance hydroxymethyl cellulose, about 0.1 per cent. of sodium protalbinate and about 0.1 per cent. of sodium lysalbinate as dispersing agents.

Whereas the oxyalkyl-cellulose or the salts of lysalbinic acid or protalbinic acid *per se* do not form in many cases permanently stable colloidal dispersions of metals, it is possible by this invention to obtain colloidal dispersions of metals which are stable for a year and more. Of course there must be observed during 40 the preparation and the storage of the colloidal dispersion of a metal obtained by the process of the invention the precautions necessary for this class of bodies.

The following Example illustrates the 45 invention:

2.75 cc. of an aqueous solution of bismuth-ammonium-citrate which is freed from ammonia to a very large extent and contains 6 per cent. of bismuth are slowly introduced, while stirring, into a mixture of 25 cc. of an aqueous solution of 0.1 per cent. of sodium lysalbinate and 0.1

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per cent. of sodium protalbinate and 25 cc. of an aqueous solution of hydroxyethylmethyl-cellulose of the relative viscosity 3 (calculated with respect to water having the viscosity 1). The solution is reduced at 50° C., in a nitrogen atmosphere and while nitrogen is caused to pass through the solution in the form of bubbles, by means of glucose or sodium hydrosulphite or formaldehyde. The colloidal dispersion obtained is precipitated with alcohol and ether and the precipitate is dissolved in water. 55 60 65

The following is a schedule describing the manufacture of the dispersion of which a sample has been furnished under Section 2(5) of the Acts:

1.0 gram of silver nitrate is dissolved in 3 cc. of water and an excess of an aqueous solution of triethanolamine of 30 per cent. strength is added: the solution obtained is then mixed with 25 cc. of an aqueous solution of hydroxyethylmethyl-cellulose of the relative viscosity 1.25 (calculated with respect to water having the viscosity 1) and 25 cc. of an aqueous solution containing 0.1 per cent. of sodium lysalbinate and 0.1 per cent. of sodium protalbinate. The whole is heated to about 70° C. The colloidal dispersion obtained is either precipitated with alcohol and ether and then redissolved in water or precipitated with dilute hydrochloric acid, washed with water and redissolved in a feebly alkaline water. 70 75 80 85

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A manufacture of stable colloidal aqueous dispersions of metals, wherein a water-soluble oxyalkyl-cellulose and a protalbinate or a lysalbinate are added as a dispersing agent. 95
2. A manufacture of stable colloidal aqueous dispersions of metals; wherein a water-soluble oxyalkyl cellulose, a protalbinate and a lysalbinate are used together as dispersing agent. 100
3. A manufacture of stable colloidal aqueous dispersions of metals as claimed

in claim 1 or 2, wherein a derivative of a water-soluble oxyalkyl cellulose is used.

4. A manufacture of stable colloidal aqueous dispersions of metals substantially as described with reference to the Example herein.

5. Stable colloidal aqueous dispersions of metals when prepared or produced by

the process of manufacture particularly described and ascertained or by any process which is an obvious chemical equivalent thereof. 10

Dated this 14th day of December, 1936.
ABEL & IMRAY,
Agents for the Applicants.

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